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(71)Applicant : JAPAN SCIENCE & TECHNOLOGY  
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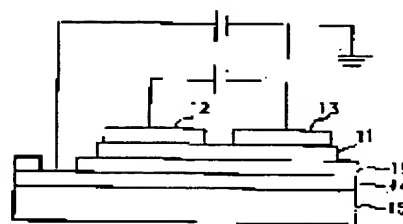
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## (54) SEMICONDUCTOR DEVICE

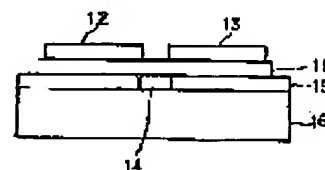
(57)Abstract:

PROBLEM TO BE SOLVED: To provide a transparent transistor using a transparent channel layer of zinc oxide doped with a 3d transition metal element, etc., free from the need of heat treatment.

SOLUTION: A channel layer 11 is formed of a transparent semiconductor, e.g. zinc oxide ZnO doped with a 3d transition metal element, etc. A source 12, a drain 13 or a gate 14 entirely or partly uses a transparent electrode which uses e.g. a transparent conductive material such as conductive ZnO doped with a III element, etc. A gate insulation layer 15 uses e.g. a transparent insulative material such as insulative ZnO doped with an element capable of taking a monovalence or a V element or 3d transition metal element. A substrate 16 may use a material comparatively easily affected by heat treatment e.g. plastics, polyethylene, polymer films, etc.



(A)



(B)

## LEGAL STATUS

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